

IN THE CLAIMS

The claims in the listing will replace all prior claims in the application.

1. (Currently Amended) A method for sterilizing an article in a sterilization gas atmosphere, comprising the steps of:

(a) providing a sterilization chamber;

(b) placing the article into the sterilization chamber;

~~(c) sealing the sterilization chamber;~~

~~(d)~~ (c) applying a vacuum to the sterilization chamber for adjusting the pressure in the sterilization chamber to a sterilization pressure at which the boiling point of water in the sterilization chamber is lowered to a temperature below the temperature in the sterilization chamber;

~~(e)~~ (d) supplying an amount of water to the sterilization chamber for humidifying the atmosphere in the sterilization chamber until a preselected humidification level is reached;

~~(f)~~ (e) supplying ozone-containing sterilization gas to the sterilization chamber until a preselected ozonation level is reached;

~~(g)~~ (f) stopping the supplying of water and ozone-containing sterilization gas and sealing the sterilization chamber for maintaining the sterilization pressure, humidification level and ozonation level, in the sterilization chamber for a preselected treatment period; and

~~(h)~~ (g) releasing the vacuum in the sterilization chamber, wherein prior to step ~~(d)~~ (c), the temperature of the article is equalized with the temperature of an atmosphere in the sterilization chamber to prevent condensation of

water on the article due to localized temperature differentials when the relative humidity in the sterilization chamber approaches saturation.

2. (Original) The method of claim 1, wherein the step of equalizing includes equalizing the temperature of the article, the atmosphere in the sterilization chamber and any components and materials in contact with the atmosphere.

3. (Previously presented) The method of claim 1, operated at a temperature in the sterilization chamber of 25 to 40°C.

4. (Original) The method of claim 3, operated at a temperature of 25 to 35°C.

5. (Currently amended) The method of claim 1, wherein the vacuum pressure is between ~~0,1~~ 0.1 and 10 mbar.

6. (Currently amended) The method of claim 5, wherein the vacuum pressure is between ~~0,5~~ 0.5 and 2 mbar.

7. (Original) The method of claim 1, wherein the amount of water is selected to achieve a level of humidity in the sterilization chamber of 85 to 100%.

8. (Original) The method of claim 7, wherein the amount of water is selected to achieve a level of humidity of at least 95%.

9. (Currently amended) The method of claim 1, wherein the steps ~~(d) to (g)~~ (c) to (f) are repeated at least once.

10. (Currently amended) The method of claim 9, wherein the steps ~~(d) to (g)~~ (c) to (f) are repeated a number of times sufficient to ensure complete sterilization of the article.

11. (Original) The method of claim 1, further comprising the step of passing all gases evacuated from the sterilization chamber through a means for destroying ozone to prevent emission of ozone to the atmosphere.

12. (Currently amended) A sterilization apparatus for the sterilization of an article, comprising

a vacuum sterilization chamber;

means for equalizing the temperature of the article and an atmosphere in the sterilization chamber to prevent condensation of water on the article due to localized temperature differentials;

means for applying a vacuum to the sterilization chamber to generate a sterilization pressure in the sterilization chamber at which lower the boiling temperature of water is below the temperature inside the sterilization chamber;

means for supplying ozone-containing sterilization gas to the sterilization chamber to generate a preselected ozonation level in the sterilization chamber;

means for supplying water vapour to the sterilization chamber to generate a preselected humidification level in the sterilization chamber; and

~~means for applying a sufficient vacuum to the sterilization chamber to lower the boiling temperature of water below the temperature inside the sterilization chamber.~~

means for selectively interrupting the supplying of water vapour and ozone-containing sterilization gas and sealing the sterilization chamber for maintaining the sterilization pressure, humidification level and ozonation level in the sterilization chamber for a preselected treatment period.

13. (Original) The apparatus of claim 12, further comprising means for maintaining the sterilization pressure in the sterilization chamber for a preselected sterilization period.

14. (Original) The apparatus of claim 12, wherein the means for applying include a door for sealing the sterilization chamber, the means for supplying water vapour include a humidifier with a water reservoir, and the apparatus further comprises a means for controlling the temperature of the chamber, the door, the humidifier and the water reservoir.

15. (Original) The apparatus of claim 12, wherein the means for applying a sufficient vacuum include means for adjusting the

pressure of the vacuum to a sterilization pressure at which any water in the sterilization chamber is in the vapour phase.

16. (Original) The apparatus of claim 12, further comprising means for destroying ozone contained in sterilization gas evacuated from the sterilization chamber.

17. (Original) The apparatus of claim 12, wherein the means for supplying ozone-containing sterilization gas is at least one ozone generator.

18. (Original) The apparatus of claim 12, wherein the means for applying vacuum is a vacuum pump capable of generating a vacuum pressure at least as low as 55.3 mbar.

19. (Original) The apparatus of claim 18, wherein the vacuum pump generates a vacuum pressure at least as low as 22.6 mbar.

20. (Original) The apparatus of claim 19, wherein the vacuum pump generates a vacuum pressure below 1.0 mbar.

21. (Original) The apparatus of claim 12, further comprising a means for monitoring a level of ozone in the sterilization chamber.

22. (Original) The apparatus of claim 12, further comprising means for monitoring and adjusting the vacuum pressure in the sterilization chamber.

23. (Original) The apparatus of claim 21 or 22, further comprising a means for controlling the operation of the apparatus by controlling the means for supplying water vapour and the means for applying vacuum in response to information on the ozone concentration and the vacuum pressure in the sterilization chamber, respectively provided by the means for monitoring the ozone level and the means for monitoring the vacuum pressure.

24. (Currently amended) ~~The method of claim 1,~~ A method for sterilizing an article in a sterilization gas atmosphere, comprising the steps of:

- (a) providing a sterilization chamber;
- (b) placing the article into the sterilization chamber;
- (c) applying a vacuum to the sterilization chamber for adjusting the pressure in the sterilization chamber to a sterilization pressure at which the boiling point of water in the sterilization chamber is lowered to a temperature below the temperature in the sterilization chamber;
- (d) supplying an amount of water to the sterilization chamber for humidifying the atmosphere in the sterilization chamber until a preselected humidification level is reached;
- (e) supplying ozone-containing sterilization gas to the sterilization chamber until a preselected ozonation level is reached;

(f) stopping the supplying of water and ozone-containing sterilization gas and sealing the sterilization chamber for maintaining the sterilization pressure, humidification level and ozonation level, in the sterilization chamber for a preselected treatment period; and

(g) releasing the vacuum in the sterilization chamber, wherein prior to step (c), the temperature of the article is equalized with the temperature of an atmosphere in the sterilization chamber to prevent condensation of water on the article due to localized temperature differentials when the relative humidity in the sterilization chamber approaches saturation and wherein the step of equalizing includes multiple steps of evacuating the sterilization chamber and intermediate steps of flushing the sterilization chamber with oxygen or ambient air.

25. (Previously presented) The method of claim 24, wherein the Oxygen or ambient air ~~are~~ is at ambient temperature.

26. (New) The method of claim 24, wherein the step of equalizing includes equalizing the temperature of the article, the atmosphere in the sterilization chamber, and any components and materials in contact with the atmosphere.

25. (New) The method of claim 24, operated at a temperature in the sterilization chamber of 25 to 40°C.

26. (New) The method of claim 26, operated at a temperature of 25 to 35°C.

27. (New) The method of claim 24, wherein the vacuum pressure is between 0.1 and 10 mbar.

28. (New) The method of claim 28, wherein the vacuum pressure is between 0.5 and 2 mbar.

29. (New) The method of claim 24, wherein the amount of water is selected to achieve a level of humidity in the sterilization chamber of 85 to 100%.

30. (New) The method of claim 30, wherein the amount of water is selected to achieve a level of humidity of at least 95%.

31. (New) The method of claim 24, wherein the steps (c) to (f) are repeated at least once.

32. (New) The method of claim 32, wherein the (c) to (f) are repeated a number of times sufficient to ensure complete sterilization of the article.

33. (New) The method of claim 24, further comprising the step of passing all gases evacuated from the sterilization chamber through a means for destroying ozone to prevent emission of ozone to the atmosphere.

34. (New) The method of claim 32, wherein the (c) to (f) are repeated a number of times sufficient to ensure complete sterilization of the article.

35. (New) The method of claim 24, further comprising the step of passing all gases evacuated from the sterilization chamber through a means for destroying ozone to prevent emission of ozone to the atmosphere.